N.A.C.A. BULLETIN

In Two Sections

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THE AUDITOR AND STANDARD COSTS

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What can be done to bring the auditor and internal accounting management closer together on the matter of standard costs? Pointing out that adoptions of standard cost systems in more and more companies pose this question, the author of this article has suggestions for resolving the situation. He believes that auditors may well fill in their training in the construction and uses of standard costs and that an acknowledged procedure for converting inventories stated at standard costs to actual costs should be available for appropriate cases. A portion of the article is devoted to outlining such a procedure.

A GREAT deal has been written concerning the subject of standard costs in the past three decades—so much, in fact, that it is difficult to develop any new aspects of the subject. The material in this article is not new in fundamentals. However, it does consider the subject of standard costs from the auditor's viewpoint rather than that of the internal accountant. The subject is developed through the analytical rather than the synthetic approach.

Increased Use of Standard Costs

This paper has been inspired largely by a present movement toward more extensive adoption of standards by medium-size enterprises and sets forth (1) a summary of some of the ways through which maximum service may be rendered in the audit of a concern which operates under a standard cost system, (2) a technique through which standard costs may be converted to actual costs, and (3) a brief resume, blended into the paragraphs covering the first two items, of some of the major elements of a standard cost system. First, however, it is desired to give some attention to the definition of standard costs, the relationship of the auditor to standard costs in their uses as management controls and inventory valuation bases, and to the attitude of the Bureau of Internal Revenue toward the use of standard inventory values for tax purposes.

A Working Definition

The definition of standard costs, in itself, offers some problems. Even at the present time, after the recognition of the term for close to thirty years, both industrial accountants and public accountants are somewhat vague as to exactly what is covered when the term is used. Some consider it to include budgeting techniques as applied to industrial operations. Others include within the term only those budgets the bases of which are built on engineering estimates. Others demand that the standards be integrated into the ledger accounts before a standard cost system is recognized. It is the writer's sentiment that the criteria of a standard cost system should be primarily the existence of engineered standards. That is to say, the existence of underlying or quantitative standards developed by engineers and, in some instances, accountants to measure the amount of material, labor, and overhead factors which enter into the manufacture of a product. To these underlying standards there are assigned dollar amounts for the convenience of a common denominator. From the dollar standards so created, the internal cost accountants then measure the departures of actual costs as incurred.

Standards need not necessarily be incorporated in the ledger accounts in order to provide effective management control for pricing purposes or to obtain adequate cost controls at the executory stages of the productive processes. However, a definite advantage is realized if incorporation is effected: the ready determination of charges to work in process, finished goods, and cost of goods sold accounts. Integration of standards into the financial ledger accounts has been accomplished by many manufacturers, large and small, with good results.

Standard costs, as a term used in this article, will be taken to mean "the use of engineered standards as a means of controlling production outlays for labor, material, and overhead, to which have been assigned dollar costs for the convenience of interpretation; the application of these standards to the control of manufacturing operations either statistically or through their incorporation into the ledger accounts and, in the latter case, the use of standard product costs for charging the inventory and cost of goods sold account."

The Auditor Can Help

Standard costs are primarily a tool of management for the control of operating expenditures as well as a means to facilitate the establishment of charges to inventory and to the cost of goods sold account. Perhaps the professional auditor need not be a technician in standard cost analysis (although desirable) to render judgment on a client's cost records and reports. However, he should be sufficiently familiar with the underlying principles of standard cost variation analyses to correctly evaluate their application to operations in a particular case and determine that they provide a correct interpretation of operating results.

The effectiveness of operating analyses of a standard cost system is not the only area with which the auditor is concerned. He is also much interested in the use of standard values in the annual financial statements. The fundamental responsibilities of the auditor in respect to standard costs (or values) in financial statements are stated by one writer as follows:

> The independent auditor must make sure that standard costs used for financial statement purposes are soundly conceived and have been adjusted to represent current standards. The discharge of this responsibility requires keen judgment and acute powers of observation on the part of the auditor. In this field he is rendering judgment, and the mathematics of the situation are secondary. (J. Harold Stewart, "Developments in Cost Accounting During the War as They Affect the Auditor," in *New Developments in Accounting*, AIA, 1946.)

A Word About Inventory Valuations for Tax Purposes

The Bureau of Internal Revenue does not specifically accept standard costs as a basis for inventory values in the tax return. A search of tax decisions dealing with inventory valuation has not revealed any case dealing with standard costs. It is generally recognized that the bureau has a marked fondness for "cost or market whichever is the lower" and that the cost referred to is actual costs arrived at through any of the different manners of derivation such as first-in, first-out; last-in, first-out; or average costs.

At first thought it would seem that standard costs might well receive full approbation of the bureau, provided that they are applied on a consistent basis from year to year. This consistency, to some extent, would destroy the dynamic nature of standards

which, to be most effective in controlling operations, should be in a constant state of flux, thereby reflecting changing conditions of operating procedure. In the past the bureau has accepted standard costs for inventory valuation where they approximate actual costs and in all probability will continue to do so in the future.

The author does not believe that any significant differences will arise between the bureau and a taxpayer where consistency in the use of standards for inventory purposes has been followed or where the standard values represent approximations to current actual costs. However, the possibility always exists that a significant increase in the ending inventory over the beginning inventory, accompanied by the use of standard values which are not approximations to actual current costs, can result in differences with the bureau. The facts of each case must be considered and a decision made according to the weight of the evidence for and against conversion.

Auditor's Responsibilities—Standard Costs Not on Books

Where standards are applied statistically the responsibilities of of the auditor ceases with the determination of their managerial effectiveness. The auditor should ascertain the soundness of the manner in which the standards were determined and the propriety of the methods in use for their application to operational control. This will entail an examination of the methods used for the assignment of dollar costs to the underlying standards, as well as a review of the standard cost reports and the techniques involved in their preparation.

It should be observed that adequate standards for the control of production outlays are not always satisfactory for establishing job prices. This is due to the fact that control of operations at the production level involves, fundamentally, the measurement of the quantities of material, labor, and overhead consumed by the responsibility areas. The assignment of dollar costs to these factors is a matter of providing a common denominator for convenience of expression. It has been stated that control at the producing (or executory) level might well be attained through the use of quantities alone, through comparison of the actual units of material consumed against the standard units allowed or a comparison of actual labor hours against standard labor hours allowed for the production. (N.A.C.A., "A Reexamination of Standard Costs," Research Series No. 11, pp. 725-26.)

The auditor should consider carefully the possible dangers contained in the use of one set of standards for the control of operations and the use of the same set for the pricing of products. Steps should be taken to assure that the management is not using standards which adequately control operational costs as the basis for pricing policies unless these standards represent current costs within the limitations of estimating fallibilities. In effecting this procedure the auditor can, at a minimum, ascertain that no job losses are being incurred due to use of faulty pricing bases.

Auditor's Responsibilities—Standard Costs on Books

When standards are made a full-fledged element of the accounting system through incorporation into the general financial accounts of a firm, the auditor's responsibilities expand beyond the operational control phase into the realm of inventory valuations. This situation exists due to the fact that it is common practice to carry inventory accounts and the cost of goods sold account at standard. Statement of inventories at actual cost should be effected when necessary in order to avoid possible disputes with the Bureau of Internal Revenue and also to present a balance sheet and a profit and loss statement which is in accord with accepted accounting principles, if the standard costs used do not accomplish this. In making this reference to accepted principles, it is with the provisions of Accounting Research Bulletin No. 29 (July, 1947) of the Committee on Accounting Procedure, American Institute of Accountants, in mind.

The statement of inventories at actual costs is not intended, in any way, to obviate the need for adjusting inventory values to reflect the lower of cost or market principle. However, conversion from standard values to actual values should be made in order to provide the bases from which adjustments to the lower of cost or market should be made. An exception is recognized in those instances where market is obviously lower than standard values.

When standards are fully integrated into the accounting system, it is common practice to ascertain inventory balances on the basis of standard costs. Illustrative of this practice is the flow of charges through work-in-process. The account may be charged at standard and relieved at standard. The balance then represents the standard cost of the work-in-process inventory. It should be observed that this is not the only technique, but it is one commonly used and it is the fundamental assumption upon which succeeding material is based.

The relief to work-in-process provides the charge to the finished goods account and finished goods are relieved at standard to the cost of goods sold account as products are sold. The basic sources of all these charges are standard product costs developed for the different products manufactured. In addition to finished goods, work-in-process, and cost of goods sold, the raw material account may also be charged and credited at standard. The net result of these procedures is that all inventory accounts are stated at standard costs in the general ledger.

Standard Cost Variance Procedure

The above remarks concerning work-in-process, finshed goods, cost of goods sold, and raw material consider only the most simple elements involved in the workings of a standard cost system when tied into the the general ledger accounts.

Where standards are an integral part of the financial system of accounts, there must be an accounting technique or methodology which recognizes the departures of actual costs from standard costs. As a result the differences between standard charges to material inventory and to work-in-process and the actual costs thereof are diverted to variance accounts and accumulated therein. The accumulated variances should be treated as charges or credits to profit and loss within the accounting period during which they occurred. A frequent variant to this, although theoretically incorrect, is to charge debit variances in this way but to apportion credit variances between inventory and cost of sales. However, it is assumed here that the standard cost system, apart from adjustment to actual, calls for regarding all variances as profit and loss items. This treatment recognizes as a basic principle the assigning of costs to their period of incidence, thus matching revenues with costs. The principle is founded on the premise that the standards are accurately set and represent the costs which should be attained with efficient operating procedures under standard conditions.

The use of standard costs for inventory valuations can come into conflict with contemporary principles of inventory values if the standards do not represent approximations to current actual costs. However, it should be noted that Accounting Research Bulletin No. 29 specifically opens the door of acceptance to standard costs for inventory valuation purposes "if adjusted at reasonable intervals to reflect current conditions." In order to comply with the

cost principle of inventory values, it *may* be necessary (in those cases where variances are significant and no adjustment of standard values to actual values has been made) for the auditor to convert standard values to actual values. To present a practical method for this conversion is, as noted at the beginning, the second principal question with which this paper deals.

Converting Standard Values to Actual Values—What Is Involved

In order to attain the most effective accuracy in the allocation of variances between inventories and products sold, such allocations should be accomplished in the everyday operations of the accounting system. However, there may be objections to this procedure which the virtue of accurate allocation may not overcome. It can destroy some of the bookkeeping simplification which is one of the advantages of standard costs and it may cloud variance reporting for control purposes if report data is taken from the ledger accounts. If allocation of variances is not the regular procedure, any allocations the auditor may make are, at the best, well-founded estimates.

If variances are allocated in the normal operating routine of the accounting system, the auditor should ascertain that the bases used are sound. It is impossible to state any definite bases which will apply in all situations. However, there is an underlying principle which the auditor may apply as a guide to his decisions. This principle, briefly stated, is that variances should be allocated to the product in accord with: (1) their incidence of occurrence in the productive process and (2) as between products on the basis of the factors which, in the first place, gave rise to the variances. This principle is illustrated in the case of variances arising as the result of failure to attain standard yields from processed material; e.g., billets charged into a bar mill from which may be produced rounds, squares, flats, octagons, etc. This variance should be allocated by the accounting system (1) at the point where failure to attain standard yield occurred (the bar mill) and (2) as between products on the basis of the raw material charged for each product group. The auditor should ascertain that the principle stated above is being recognized in the absorption of variances into the inventory accounts and related allocations as between product lines. Once allocated, the variances will follow the products out of the inventory accounts into cost of goods sold.

In the case of fully integrated manufacturing operations, the

problems involved in determining the soundness of variance distributions are greatly increased. This is due to the complexity of operations involved and the multitudinous points at which the variances may arise. If at the end of the first operation a product results which is ready for sale, no further complications arise. The inventory becomes converted to actual cost through application of the variant arising from this operation, and actual costs are charged to cost of goods sold as sales are made. On the other hand, if additional operations are needed to complete a product for sale the variances from succeeding operations will have to be accumulated until the product goes to warehouse for shipment in order to arrive at actual value of inventory. The techniques for the accomplishment of this purpose are complex and will vary from organization to organization.

It is impracticable in such cases to assign variances as between inventories and cost of goods sold at the year's end with any hope of real accuracy. If allocations have not been made in the course of operations the auditor can only, at the best, attempt to allocate between inventories and cost of goods sold on some reasonable basis. The inability to make accurate allocations at the year's end arises from the fact that variances associated to products may be debit or credit in nature and they may arise at so many different points. In order to make precise allocations (assuming not made), it would be necessary to rework the entire year's operations.

Procedure for Conversion of Standard Values to Actual Values

In the illustrative material which follows there is presented a ratio method for converting from standard values to actual values. This method, as discussed and illustrated, is based upon the fifo method of deriving costs. The same technique can be used where average costs or lifo are used.

If inventories at standard costs are to be restated at actual costs in any case, a recognized procedure is required for accomplishing this. The procedure need not be free from possible objections—no practical method for achieving an objective ever is—but care should always be taken to make sure that its application will not produce distorted results in the instance at hand. If this is kept in mind, the procedure to be described in the paragraphs which follow—although it assumes the handling of variances as net figures (not distinguishing debit and credit elements) and although it places all products on the same footing (pro rata allocation of net variances)—may be expected to give a sound answer under

most circumstances. It is based on determining—and applying to inventory figures at standard costs—five percentage relationships between actual and standard costs derived from the transactions of the year as a whole. The five ratios relate actual and standard costs of: (1) material in raw stock inventory, (2) material in process, (3) labor, (4) overhead, and (5) finished goods. In general, the desired percentages are arrived at by dividing standard cost of the year's charges in each of these categories into actual cost considered to be standard cost with applicable variances added back. However, in order to accomplish the several determinations of actual cost the ratios are related one to the other and it is with the determination of those actual costs that the remainder of this article is concerned.

In the case of materials resting in the raw stock inventory at standard cost, it is necessary only to total the year's charges and divide this total into the same amount plus the price variance for the year, drawn off into the variance account when purchases were made. The resulting percentage applied to the raw material inventory at standard cost will approximate actual cost under the method proposed. This ratio also plays a part in the adjustment of material in process to actual costs. The credits to the raw material account (related to charge to process) contain the amount to be taken to the usage variance account but are net of the applicable price variance. Hence, adjustment of the total credits at standard to the raw material account for the year by the percentage developed above will give approximate actual cost of credits to raw material and may be divided by the year's material charges to work in process at standard to obtain the ratio by which to adjust inventory of material in process at standard to actual costs.

The process is just a bit simpler with respect to deriving the corresponding ratios by which to multiply labor and burden in process at inventoried standard costs to arrive at approximate inventories at actual costs. With respect to labor, the percentage is obtained by dividing the year's charges to labor in process at standard costs into the same figure plus both rate and usage variances. Similarly with respect to overhead, it is not necessary to give separate consideration to expenditure, volume, and performance variances. It will prove satisfactory to derive the percentage desired by dividing the year's charges to process for overhead at standard cost into the same amount plus net overhead variance for the year.

RECORD DATA FOR YEAR FOR DEVELOPMENT OF STANDARD TO ACTUAL CONVERSION RATIOS

Standard Cost of Company's Product

Element	*Units required for product*	*Standard cost of element unit*	*Standard cost of product unit*
Material	2 ea.	$1.00	$2.00
Labor	.5 hr.	1.80	.90
Overhead	1.0 hrs. (D.L.)	2.10	2.10
Total standard cost of product unit			$5.00

Summary of Inventory Account Entries at Standard Cost

	Raw Material		*Work in Process*			*Finished Goods*	
	Units	*Amount*	*Units*	*Price*	*Amount*	*Units*	*Amount*
Opening balance	15M	$ 15,000	1M	$5	$ 5,000	20M	$100,000
Purchases	100M	100,000					
Issues	(105M)	(105,000)					
Process charges							
Material				2	100,000		
Labor			50M	.90	45,000		
Overhead				2.10	105,000		
Production							
Material				2	(96,000)		
Labor			(48M)	.90	(43,200)		
Overhead				2.10	(100,800)	48M	240,000
Cost of sales						(55M)	(275,000)
Closing balance	10M	$ 10,000	3M	$5	$ 15,000	13M	$ 65,000

Variance Account Balances
(net debit variance in each instance)

Material price	$ 10,000	
Material usage		$ 5,000
Labor rate		$ 500
Labor performance		4,500
		$ 5,000
Overhead (net)		$10,000

Finished goods does present a special problem and the adjustment of finished goods inventory at standard costs to approximate actual cost calls for a single ratio which must be developed by use of those for work in process. It is necessary to apply the in process adjustment percentages to the respective standard cost amounts for the year by which work in process was relieved for material, labor, and overhead in product finished. The aggregate of these three actual cost figures may be divided by the charges at standard cost to the finished goods for the year and the ratio so obtained may be applied to the finished goods inventory at standard cost to restate it at actual cost and complete the conversion of inventory from standard to actual values.

Conversion of Cost of Goods Sold to Actual

In converting cost of goods sold to actual costs there is a problem, under the fifo approach used herein, which the auditor must watch for. This is the existence, in the cost of goods sold account, of units from the beginning inventory at standard which should be converted on the basis of actual to standard ratio of the previous period. This problem may be solved by dividing the cost of goods sold account into two elements, (1) standard cost of units in beginning inventory of finished goods and (2) standard cost of units from current year's production. There should be applied to the beginning inventory the ratio between actual costs and standard costs in the finished goods account at the end of prior period. Then there should be applied to the standard cost of the units from current production, the ratio used for the conversion of the finished goods inventory at the end of the current period.

If lifo were used it would not be necessary to make the division outlined above and the conversion could be made simply by extending the standard cost of goods sold by the finished goods conversion ratio. If average costs were used, the finished goods ratio would also be used but it would differ from the one derived under fifo due to the averaging together of beginning inventories and current production in the determination of the ratios.

Illustrative Application of Ratio Method

In order to clarify and bring together all the parts of the above discussion, there follows an illustrative case which demonstrates the application of the foregoing ratio technique for the conversion of standard costs to actual costs. In order to simplify

DERIVATION AND APPLICATION OF CONVERSION RATIOS

Conversion formula		*Substituted figures*		*Conversion ratio*	*Inventory* *At standard cost*	*Inventory* *Adjusted to actual cost*
Raw Material Inventory						
Purchases at standard plus price variance / Purchases at standard	=	$100,000 + $10,000 / $100,000	=	110	$10,000	$11,000
In Process Inventory						
Raw material issues at standard times raw material ratio / Material charges at standard	=	$105,000 × 110 / $100,000	=	115.5	6,000	$ 6,930
Labor charges at standard plus rate and performance variance / Labor charges at standard	=	$45,000 + $5,000 / $45,000	=	111.11	2,700	3,000
Overhead charges at standard plus net variance / Overhead charges at standard	=	$105,000 + $10,000 / $105,000	=	109.52	6,300	6,900
						$16,830
Finished Goods						
Material, Labor, Overhead in transfer from process × Process Ratio		$ 96,000 × 115.5 = $110,880 43,200 × 111.1 = 47,995 100,800 × 109.52 = 110,396 $269,271				
Charges at standard	=	$240,000	=	112.2	65,000	72,930
Cost of Goods Sold						
Finished goods ratio—beginning inventory				*110	100,000	110,000
Finished goods ratio—closing inventory				112.2	175,000	196,350
						$306,350

* assumed

the presentation it is assumed that but one type of material is used and that there is but one product manufactured. There are maintained five variance accounts as follows: (1) material price variance, (2) material usage variance, (3) labor price variance, (4) labor usage (or performance) variance, and (5) overhead variances.

In Exhibit 1, the information called for and which must be available from the books and records is summarized. This includes data from the standard cost card for the company's product and totals from the inventory and variance accounts for the year. The figures given are applied in Exhibit 2 which develops the ratios, first by formula and then on the data given, and displays their application to the inventories at standard costs to arrive at actual cost inventories in the final column.

Conclusion

It is desired to emphasize, before concluding this article, that the verification of records and certification of statements for a concern operating on a fully integrated standard cost system can offer some problems which differ widely from those encountered in the examination and certification of records kept on an actual cost basis. These differences stem, for the most part, from the existence of variances from standard.

Where allocation of variances to product is deemed necessary or desirable, the results will be closely accurate only if the allocation takes place in the normal course of the accounting process, thereby obviating the need for converting standard values to actual values. However, if such allocations have not been made during the fiscal period, the auditor may be able to render a real service by making conversions in the manner suggested in this article. It may be that the necessity for conversion will be for tax purposes only and that through conversion any possibility of differences with the Bureau of Internal Revenue can be avoided. In addition, the actual cost concepts which are at present accorded general preference in modern financial statements will be observed in those instances where it appears that standard values represent serious departures from current actual costs.

It is also desired to reiterate that the ratio method of converting from standard costs to actual costs as suggested in this article has

two basic weaknesses. The first is the netting out of debit and credit variations against one another in determining the ratios to be used in conversion. The procedure does not give consideration to the fact that certain credit variances may be altogether assignable to products which are still in inventory or that certain debit variances may be associated entirely with the cost of goods sold. Wherever a credit variance can be associated directly with the ending inventory, it is to the tax benefit of the current period. This is also true of a debit variance that may be assigned to the cost of goods sold. There have been previously pointed out the practical difficulties preventing an association of specific variances to inventories and cost of goods sold at the year's end. The second weakness is the assumption that all products share alike in variances resulting from operations, whether debit or credit. This would hardly ever be strictly in accordance with fact and might sometimes be untrue to an important degree. Although the ratio method does ignore the factors mentioned, it has the advantage of being practicable of accomplishment within the limits of the audit engagement.

In conclusion, there are listed some of the services that may be rendered through an intelligent review by the professional accountant of standard cost accounts and procedures, based on a well-founded knowledge of standard cost objectives and techniques:

1. Avoidance of possible differences with the Bureau of Internal Revenue.
2. Improved assignments of underlying dollar standards.
3. Better operating control through the allocation of variances in the course of operations to the extent which may prove practicable and useful, and which may result in tax benefits to the current year through direct association of debit variances with the cost of goods sold and credit variances with inventory accounts.
4. Improved control at the executory (or productive) level through an analysis of standard cost reporting methods.
5. In the case of job manufacturers, the elimination of losses due to jobs being priced on standards which are not close approximations of current costs.
6. Financial statements which are in agreement with contemporary principles of accounting.

A CASE STUDY IN THE BUDGETING OF AIRLINE REVENUE, EXPENSE, AND CAPITAL OUTLAY

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The present article outlines the steps followed and bases used by a large airline with world-wide operations in arriving at budgetary amounts, over-all and by districts, for sales, operating costs, and property and equipment acquisitions. The primary objective is given as control of activity in all parts of the system so that revenue opportunities may be taken advantage of by promptly expanded service and so that costs may be kept soundly productive.

IT IS familiar news to all in the business world that the airline industry is experiencing a critical financial situation which will severely tax efforts of both the industry and the Federal Government before satisfactory financial operating conditions are ultimately made possible. Because of the aggressive expansion policy

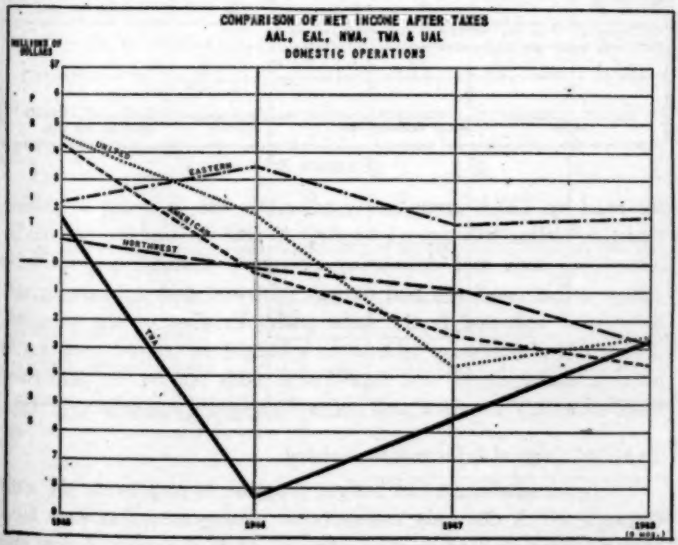

EXHIBIT 1

PROPOSED SALES AND LOADING BUDGET

_____ (DISTRICT)

TRANSCONTINENTAL

	ACTUAL FOR _____ 194	_____ BUDGET 194	
		SALES RESEARCH	DISTRICT
SALES (1)			
1. BY TWA OFFICES & CON. AGENTS			
2. BY OTHER AIR LINES			
3. TOTAL PASSENGER SALES			
4. MAIL (ORIGIN LBS. X $_____ /)			
5. EXPRESS (ORIGIN LBS. X $_____)			
6. FREIGHT (2) (AVG. LBS. X $_____)			
7. TOTAL CARGO SALES			
8 TOTAL SALES			
VOLUME			
9. REVENUE PASSENGERS PUT ON			
10. MAIL, ORIGIN LBS. LOADED			
11. EXPRESS, ORIGIN LBS. LOADED			
12. FREIGHT, TOTAL ORIGIN & DESTINATION LBS.			
SCHEDULED DEPARTURES			
DC-3 PASSENGER			
CONNIE			
STRATOLINER			
DC-3 CARGO			

(1) PASSENGER SALES ARE THE GROSS AMOUNT FOR TRAVEL ON TWA.
(2) TOTAL ORIGIN AND DESTINATION POUNDS DIVIDED BY TWO.

_____ (DATE) _____ (SALES RESEARCH DEPT.) _____ (DATE) _____ (DISTRICT MANAGER)

EXHIBIT 2

followed by TWA immediately after the war, it is not surprising that this airline was one of the first to feel the squeeze exerted by increasing costs and decreasing revenues. Exhibit 1 graphically portrays this condition and indicates further that most major airlines soon followed in the same path. In view of the situation, TWA felt it necessary to turn to a budgetary control program to provide management and supervision with one of the important tools necessary to create and maintain a sound financial operation.

Types of Control Information Needed

The goal of the control budget program is to provide the tools through which not only members of management but each individual operating head may be equipped to do the most efficient and economical job of charting TWA's course through waters which are continually churned by changing financial and operating con-

ditions. To accomplish this end it is necessary to establish means of setting forth:

1. Anticipated revenues.
2. Planned expenditures of both expense and capital nature.
3. Over-all reports and comparisons which will provide each operating head with sufficient information to tell him where and how he is spending the money allotted to him.

The Revenue Budget—Over-all and by Districts

Fundamentally, the sales budget plan involves the translation of management plans and policies into a sales goal for each district

SALES AND LOADING BUDGET

_____ (DISTRICT)

TRANSCONTINENTAL

SALES (1)				
1. BY TWA OFFICES & CON. AGENTS	$_____	$_____	$_____	$_____
2. BY OTHER AIR LINES	_____	_____	_____	_____
3. TOTAL PASSENGER SALES	_____	_____	_____	_____
4. MAIL (ORIGIN LBS. X $_____)	_____	_____	_____	_____
5. EXPRESS (ORIGIN LBS. X $_____)	_____	_____	_____	_____
6. FREIGHT (AVG. LBS.(2) X $_____)	_____	_____	_____	_____
7. TOTAL CARGO SALES	_____	_____	_____	_____
8. TOTAL SALES	$_____	$_____	$_____	$_____
	_____	_____	_____	_____
VOLUME				
9. REVENUE PASSENGERS PUT ON	_____	_____	_____	_____
10. MAIL, ORIGIN LBS. LOADED	_____	_____	_____	_____
11. EXPRESS, ORIGIN LBS. LOADED	_____	_____	_____	_____
12. FREIGHT, TOTAL ORIG. & DEST. LBS.	_____	_____	_____	_____

(1) PASSENGER SALES ARE THE GROSS AMOUNT FOR TRAVEL ON TWA.
(2) TOTAL ORIGIN AND DESTINATION POUNDS DIVIDED BY TWO.

(T) TENATIVE
(F) FINAL

_____ (SALES RESEARCH)

DATE _____

_____ (GENERAL SALES MANAGER)

EXHIBIT 3

VARIABLE MONTHLY EXPENSE BUDGETS
TRANSCONTINENTAL DIVISION
TWA FLYING OPERATIONS
THOUSANDS OF DOLLARS
2000
1800
1600
1400
1200
1000
800
600
400
200
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
MILLION STANDARD AVAILABLE TON MILES
SALARIES & WAGES
GASOLINE & OIL
RENTALS & LANDING FEES
OTHER DIRECT EXPENSES INCIDENTAL

throughout the system. The sales research staff assembles statistics showing the performance of TWA's airport stations from coast to coast—number of flights out of each station, passengers boarding, and loadings of mail, express, and freight. This staff also considers weather, general economic conditions, possible rate changes, schedule plans, and all other factors influencing the sales potential of each district.

Based on this information, a preliminary sales budget for each district is established for a period of four months in advance and submitted to the districts for review in the form shown in Exhibit 2. Each district then has a crack at its own sales budget, using intimate knowledge of local conditions and economic factors. Budget estimates are then returned and final sales budgets set, based on comments from the field and combined estimates from both field and staff personnel.

Totaling the individual district sales budgets provides management with an over-all sales and revenue budget (Exhibit 3) with which to gauge over-all expense budgets in working out a profitable level of operations. Expansion of sales budget figures in conjunction with aircraft operating statistics gives complete complementary information relative to miles flown, available ton miles, passengers, baggage, mail express, etc. Further, the sales budget by districts provides added operational and traffic volume statistics required in setting expense budgets for each station.

Lastly, the sales budget program provides each district, each region, and each department of TWA with its own revenue goals and with its expected volume of operations to tie in with the expense budgets assigned. In effect, it provides each location and each departmental unit with a plan of operation and a goal four months in advance.

The sales budget is checked currently against actual sales and through this "pin point" control, top management can immediately determine which districts are contributing to any increase in sales revenue of the company. Automatically, this shows those districts which have been welded into hard-hitting sales organizations where everyone is fighting for additional revenues for TWA.

Credit for meeting the budget and exceeding it is extended through a closer liaison between top management and those on the "firing line." This liaison is essential to the company's welfare. Comparisons of actual sales with sales budgets for those districts which show performance in excess of budget will point out the

VARIABLE MONTHLY EXPENSE BUDGETS
TRANSCONTINENTAL DIVISION
TWA TOTAL EXPENSES - ALL FUNCTIONS
THOUSANDS OF DOLLARS
5800
5600
5400
5200
5000
4800
4600
4400
4200
4000
3800
3600
3400
3200
3000
2800
2600
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
MILLION STANDARD AVAILABLE TON MILES
DISTRIBUTED INDIRECT EXPENSE
CREDIT
OTHER EXPENSES
OTHER FLIGHT OPERATING EXPENSES
COMMUNICATIONS-GENERAL
TRAVEL & INSURANCE & LANDING FEES
RENTALS & UNIFORMS & SUPPLIES
MAINTENANCE MATERIALS & SUPPLIES
MAINTENANCE OTHER SUPPLIES
GASOLINE
AIRCRAFT & OIL
DEPRECIATION & AMORTIZATION
SALARIES & WAGES

necessity for providing additional service through these districts by schedule and operational changes.

Variable Expense Budgets Based on "Available Ton Miles"

In the budget programs of some companies, it has been the policy to establish expense limitations and controls primarily with reference to forecast income as indicated by a sales or revenue budget. The initial approach in TWA, however, was not based on this premise. It was based upon two considerations:

1. TWA must operate the airline's essential service or commodity, at expenses per available ton mile, as low or lower than costs of its competitors if it is to survive and prosper in the air transportation industry.
2. Total expenses authorized must be allowed to vary in accordance with the level of operations as determined by scheduled available ton miles.

Accordingly, to reduce the variable expense budgets to a formula would be to say:

1. Lowest cost per ton mile among competitors plus adjustment for TWA's own particular type of operations multiplied by budgeted available ton miles for a given period equals maximum amount of money TWA should spend during period.
2. Maximum amount TWA should spend on all activities divided by number of departments in company, each getting fair proportionate share, divided by number of subdepartments in a department, each getting its fair share, equals amount of money each subdepartment should spend over the given period.

From the preceding, the basic plan of budgetary control begins to become clear. In Exhibit 4 will be found the Civil Aeronautics Board expense classification "Flying Operations" broken down by type of expense. Taking any available ton mile figure on the bottom of the chart and traveling perpendicularly until each sloping line is reached will indicate the specific expense total budgeted for that function at that particular level of operations.

On Exhibit 5 the company total of budgeted expenses is detailed by type of expense. If it is desired to isolate the fixed and variable elements of aggregate budgeted expenses, it is apparent that a *horizontal* line drawn across the graph from the point at

which the total expense line originates will mark off the fixed portion in the conventional manner of representation used in flexible budgeting. The same segregation can be achieved for each function in the same way if the function in question is charted separately rather than in layers, one above the other, as on Exhibit 5.

Proportioning Expenses to Departments

From this point, the next step is to distribute the CAB functional budgets according to TWA departments by determining historically for each item of expense the proportion of each CAB functional account which applies to each department. The results of this process, say for the operations department, would result in a graph very similar to Exhibit 5. However, the distinction should be kept in mind that Exhibit 5 portrays the result of assembling budgeted costs on the available ton mile basis whereas the process from this point on is largely one of equitable allocation.

In a corresponding manner, the breakdown for subdepartments can be computed. It is at this point that we get to the heart of this program, since the information given to each operating head tells the supervisor of even the smallest company unit how much money he can spend to operate over a given period and, by reference to the sales-revenue budget, how much revenue he is expected to produce. In the case of nonrevenue producing departments, it tells him how much work he will have to accomplish to back up the departments which do produce the direct revenue.

The supervisor is likely to find that under budgetary control he has been given more latitude than he had under the former method under which he had to plead for "more help" or "more equipment" or "more travel" and get it piecemeal if approved. Under the budget plan he operates more or less as a free agent, spending his allotment of funds as he sees fit to accomplish his assignments. If he decides to spend more money on travel and less on salaries, or *vice versa*, it is up to him, in most instances. His ability will be judged by the final results he accomplishes, both from an operating as well as a cost standpoint.

Knowing exactly how much he has to spend to cover a given period, he is more apt to render considered judgment. His attitude changes from that of trying to pry every possible dollar out of his boss to one of trying to live within his budget, since he knows that if he exceeds that budget the excess will have to come out of some other supervisor's allotment.

Property and Equipment Budget

While the variable expense budget is geared to the level of operations, the capital expenditures of the company are at any one time related to the level of operations only in an indirect manner. Since requirements for capital expenditures depend on need for replacement, expansion, or improvement of capital facilities as dictated by equipment obsolescence, acquisition of new routes or new stops on existing routes, assumption of new functions, expansion of existing operations, and other such factors, the property and equipment budget, that is, the capital budget, is the one expenditure budget which is arrived at through the building up of individual items.

Each six months department heads are requested to submit this budget in accordance with certain restrictive policies and in accordance with specific planning premises established by management. Each item on these budgets must be individually justified as to its necessity. The grand total of all of these separate items as finally approved comprises the property and equipment budget for the company. However, it is still necessary to obtain individual and specific approval for each of the items included in the original budget before actual work may be started or purchase made. This requirement, provided for through a related authority for expenditure and requisition procedure, serves as a double check on those expenditures which may have become less urgent because of changed conditions since approval of the original budget as well as allowing for a more thorough and exacting review of each item individually.

While the original budget consists of specifically identified items, department heads are allowed reasonable leeway in requesting that a new expenditure be charged against funds already approved for another item, providing the new expenditure is completely justified and the department head concerned approves the substitution. Accordingly, in this manner, supplemental property and equipment budgets are required only in those few cases where approval of a fully substantiated expenditure would cause an overrun of the original departmental budget. This budget sets forth, in addition to total expenditures, the month in which it is estimated cash expenditures will be made. In the same manner, each monthly report of capital expenditures establishes not only what expenditures have been specifically authorized but also the rate at which previous authorizations are consuming cash.

TWA - TRANSCONTINENTAL DIVISION — Budget Report 3-1

DAILY PROFIT & LOSS STATEMENT

Day		Saturday, July 10,	Month to Date		
Actual	Forecast(1)		Actual	Forecast(1)	Variance
		OPERATING REVENUES			
$ 154,750	$ 153,350	PASSENGER	$1,500,400	$1,533,480	$ (33,080)
1,700	1,480	EXCESS BAGGAGE	16,510	14,770	1,740
11,820	11,850	MAIL	108,790	118,340	(9,550)
5,990	5,540	EXPRESS	46,940	54,380	(7,440)
3,790	4,550	FREIGHT	33,370	44,060	(10,690)
-	-	CHARTER	-	-	-
390	390	INCIDENTAL (NET)	3,880	3,880	-
$ 178,440	$ 177,160	TOTAL REVENUE	$1,709,890	$1,768,910	$ (59,020)
		EXPENSES			
$ 166,590	$ 166,580	OPERATING	$1,663,370	$1,665,800	$ 2,430
4,390	4,390	NON-OPERATING (NET)	43,880	43,880	-
$ 170,980	$ 170,970	TOTAL EXPENSES	$1,707,250	$1,709,680	$ 2,430
$ 7,460	$ 6,190	NET PROFIT (LOSS)	$ 2,640	$ 59,230	$ (56,590)
		MILES FLOWN			
153,137	152,187	SCHEDULED	1,526,456	1,517,849	8,607
3,805	3,538	TRAFFIC EXTRA SECTIONS	28,402	32,314	(3,912)
-	452	OPERATIONAL EXTRA SECTIONS	2,864	4,520	(1,656)
-	-	CHARTER	-	-	-
156,942	156,177	TOTAL REVENUE MILES FLOWN	1,557,722	1,554,683	3,039
6,136	6,752	NON-REVENUE MILES FLOWN	64,010	67,520	(3,510)
163,078	162,929	TOTAL MILES FLOWN	1,621,732	1,622,203	(471)
543,302	545,982	TOTAL AVAIL.TON MI.(INCL.NON-REV)	5,385,180	5,440,316	(55,136)
		PER TOTAL AVAILABLE TON MILE			
$ 0.329	$ 0.324	OPERATING REVENUE	$ 0.317	$ 0.325	$ (0.008)
0.307	0.305	OPERATING EXPENSE	0.309	0.306	(0.003)
$ 0.014	$ 0.011	NET PROFIT (LOSS)	$ -	$ 0.011	$ (0.011)
		LOAD FACTOR, ALL EQUIPMENT			
66.5 %	66.4 %	PASSENGER	64.6%	66.4 %	(1.8) % PTS
49.3 %	52.2 %	CARGO	44.0%	52.2 %	(8.2) % PTS
61.8 %	62.4 %	TOTAL PAYLOAD	59.2%	62.4 %	(3.2) % PTS
		PERFORMANCE			
100.0 %	98.6 %	% OF SCHEDULED MILES COMPLETED	99.5%	98.6 %	0.9 %
99.7 %	97.5 %	% SCHEDULED STATION STOPS COMPLETED	98.6%	97.5 %	1.1 %
137	-	TOTAL DEPR. HOURS LATE-ALL STA.	1,087	-	-
		AVERAGE LATENESS-ALL DEPARTURES			
304	669(3)	NUMBER OF LATE DEPARTURES	3,013	6,597(3)	-
19	-	TOTAL HOURS OF GROUND DELAYS	229	-	-
		AVERAGE GROUND DELAY-ALL DEPR.			
113	-	NUMBER OF STATION GROUND DELAYS	1,205	-	-
		TOTAL HOURS OF GROUND TIME SAVED			
		REVENUE BY TYPE OF EQUIPMENT			
$ 80,890	$ 85,960	DC-3 PASSENGER AIRCRAFT (2)	$ 805,010	$ 859,600	$ (54,590)
88,530	78,430	CONSTELLATION AIRCRAFT (2)	801,980	784,300	17,680
5,900	8,960	STRATOLINER AIRCRAFT (2)	71,320	89,600	(18,280)
2,470	2,540	DC-3 CARGO AIRCRAFT (2)	21,160	22,710	(1,550)
260	580	DC-4 PASSENGER AIRCRAFT (2)	6,240	5,820	420
-	300	OPERATIONAL EXTRA SECTIONS	300	3,000	(2,700)
		SKY COACH			

(1) Forecast data reflects proportionate share of monthly forcast based upon scheduled miles for all items except expenses which are prorated to no. of days in the month.
(2) Scheduled Operations, including Traffic Extra Sections.
(3) Total number of departures.

EXHIBIT 6

Part Played By the Budget Committee

The final establishment and approval of all budgets rests with a budget committee which includes as members the senior officers of the company. This committee has the final say as to how the entire budget "pie" is to be divided among departments, particularly with reference to the variable expense budget. It is obvious that if one department is given a larger slice, some other department will have to take a smaller piece, because there is only one pie to go around. That is why top officers comprise the committee—it takes top authority to make those decisions stick.

Once a budget has been established and the operating heads so notified, no active control is brought into play unless a budget is not being met. So long as a unit accomplishes its jobs within its authorized budget, the operating head knows where he stands and no "big boss" is continually demanding further economy.

Reports to Management

It is important that management be able to put its finger on any leak which is draining away valuable revenue dollars, so that maximum savings can be maintained at all times and so that immediate and specific control of expenses may be exercised when the occasion so demands. Accordingly a number of budget-slated reports are in order.

The first of these reports is the "Daily Profit and Loss Statement" (Exhibit 6). It will be observed that the first portion of this report gives a comparison of the various types of revenue as forecast vs. actual revenue for the day and for month to date, as well as comparison of total forecast expenses vs. actual expenses thereby showing the net result of the day's and month to date's operations. Following this information are summary figures showing other important comparisons of budget vs. actual, namely: miles flown, total available ton miles, operating revenue and expense per total available ton mile, load factor, schedule performance, and revenue by type of equipment.

Particular attention is invited to the figures representing the "Forecast" and "Actual" under expense. The forecast figure consists of the daily pro rata share of the total variable expense budget as established for the current month. The variance between the actual and this figure represents an adjustment to the forecast figure to show the increase or decrease in flight pay and gasoline

Trans World Airline

TRANSCONTINENTAL DIVISION - INCOME ACCOUNT - BUDGET COMPARISON

August

Month of August				Two Months Ended August 31,		
Budget	Actual	Variance		Budget	Actual	Variance
			Operating Revenues:			
$ 4,386,150	$ 4,355,402	$ (30,748)	Passenger	$ 8,181,635	$ 8,171,062	$ (10,573)
240,026	239,906	(120)	Mail - United States	490,098	494,670	4,572
162,669	155,812	(6,857)	Express	322,090	321,801	(289)
64,963	67,412	2,449	Freight	136,512	143,372	6,860
43,861	46,311	2,450	Excess Baggage	81,815	89,161	7,346
12,825	13,294	469	Nonscheduled Transport Services	16,716	16,715	(1)
-	590	590	Other Transportation	-	1,505	1,505
$ 4,910,494	$ 4,878,727	$ (31,767)	Total Transportation Revenues	$ 9,228,866	$ 9,238,286	$ 9,420
15,000	10,282	(4,718)	Incidental Revenues	30,000	20,474	(9,526)
$ 4,925,494	$ 4,889,009	$ (36,485)	Total Operating Revenues	$ 9,258,866	$ 9,258,760	$ (106)
			Operating Expenses:			
$ 1,101,132	$ 1,125,314	$ (24,182)	Flying Operations	$ 2,191,394	$ 2,261,980	$ (70,586)
402,945	651,150	(248,205)	Direct Maintenance - Flight Equipment	809,394	1,065,908	(256,514)
371,833	360,725	11,108	Depreciation - Flight Equipment	743,666	693,631	50,035
$ 1,875,910	$ 2,137,189	$(261,279)	Total	$ 3,744,454	$ 4,021,519	$(277,065)
$ 628,292	$ 588,360	$ 39,932	Ground Operations	$ 1,259,776	$ 1,239,057	$ 20,719
466,831	457,661	9,170	Ground and Indirect Maintenance	936,641	933,753	2,888
345,462	352,061	(6,599)	Passenger Service	693,304	749,729	(56,425)
523,611	683,378	(159,767)	Traffic and Sales	1,050,006	1,196,192	(146,186)
138,811	221,601	(82,790)	Advertising and Publicity	278,883	313,142	(34,259)
385,831	350,425	35,406	General and Administrative	773,916	749,002	24,914
55,000	70,411	(15,411)	Depreciation - Ground Equipment	110,000	184,048	(74,048)
$ 2,543,838	$ 2,723,897	$(180,059)	Total	$ 5,102,526	$ 5,364,923	$(262,397)
$ 4,419,748	$ 4,861,086	$(441,338)	Total Operating Expenses	$ 8,846,980	$ 9,386,442	$(539,462)
$ 505,706	$ 27,923	$(477,823)	Net Operating Income	$ 411,886	$ (127,682)	$(539,568)
(105,543)	(105,543)	-	Non-Operating Income and (Expense)-Net	(247,795)	(247,795)	-
$ 400,203	$ (77,620)	$(477,823)	Net Income or (Loss) Before Income Taxes	$ 164,091	$ (375,477)	$(539,568)
-	-	-	Income Taxes	-	-	-
$ 400,203	$ (77,620)	$(477,823)	Net Profit or (Loss) for Period	$ 164,091	$ (375,477)	$(539,568)
15,423,390	15,142,175	(281,215)	Total Available Ton Miles (Inc.Non-Rev.)	31,500,191	30,509,383	(990,810)
			Per Total Available Ton Mile			
$.3194	$.3229	$.0035	Revenue	$.2939	$.3035	$.0096
.2864	.3210	(.0346)	Expense	.2809	.3077	(.0268)
$.0330	$.0019	$(.0311)	Operating Profit or (Loss)	$.0130	$(.0042)	$(.0172)

costs computed on the basis of actual miles flown during the day in question.

In addition to the daily profit and loss statement, there are other reports setting forth in greater detail operating comparisons for various types of equipment and operations such as daily performance by aircraft, traffic volume, revenue use of aircraft and load report, analysis of extra sections and nonrevenue miles, and station ground delay report. Through daily review of these, management and departmental heads can at all times keep abreast of actual operations of the company as they are related to the overall budgeted plan of operations. The "actual" figures on the daily profit and loss statement and the other comparison reports, except for total expenses as explained above, are computed from operating statistics submitted to a central location throughout all the hours of the day. This computation involves the use of a load manifest which is an actual work sheet upon which is placed all pertinent information concerning the handling given any one flight by each airport station involved. Upon departure from a station, arrival at a station, or passing over a scheduled stop, a report is dispatched immediately by teletype to a central flight planning office and to other airport stations interested in the progress of the flight.

In addition to the preceding reports, certain other comparison and summary reports are prepared on the basis of the operating statistics received from each station. These are briefly described as follows:

1. Station Sales Budget Comparison and Loading Report—compares budgeted revenue traffic, passengers, and cargo sales with actual.
2. Summary of Average Passenger and Cargo Loads—identified by type of aircraft and airport station.
3. Summary of Estimated Revenue by Scheduled Flights—identified by passenger and cargo flight and airport station.
4. Summary of Transcontinental Division Revenue Passengers Carried—identified by station and destination of passengers from that station.
5. Income Account—Budget Comparison.

The last of these reports, the Monthly Income Account—Budget Comparison, which presents comparison of budget vs. actual for

TRANS WORLD AIRLINE

OPERATING BUDGET COMPARISON

RESPONSIBILITY OF J. A. Collings — August, 194

DEPARTMENT	LOCATION	DIV. NO.	LOC. NO.	DEPT. NO.
Operations Department	All	1	All	600

CURRENT MONTH			EXPENSES	2 MONTHS TO DATE		
BUDGET	ACTUAL	VARIANCE		BUDGET	ACTUAL	VARIANCE
$1,811,414	$1,820,901	$ (9,487)	Salaries and Wages	$3,653,034	$3,669,115	$(16,081)
104,819	100,913	3,906	Travel and Incidental	212,148	209,339	2,809
39,379	40,322	(943)	Communications	79,461	81,249	(1,788)
20,978	21,419	(441)	Light, Heat, Power and Water	42,508	43,159	(651)
14,279	13,993	286	Agency Services and Joint Facilities	28,853	28,196	657
-	-	-	Legal and Professional Fees	-	-	-
81,457	82,513	(1,056)	Rentals and Landing Fees	164,295	166,428	(2,133)
575,000	553,918	21,082	Aircraft Fuels and Oils	1,135,000	1,110,913	24,087
240,446	256,009	(15,563)	Maintenance Material and Outside Repairs	487,171	515,858	(28,687)
227,961	238,306	(10,345)	Other Supplies	459,651	489,186	(29,535)
83,102	83,418	(316)	Insurance and Uninsured Losses	168,035	168,487	(452)
122	93	29	Advertising and Publicity	247	259	(12)
-	-	-	General Taxes	-	-	-
-	-	-	Depreciation	-	-	-
52,433	71,398	(18,965)	Expenses Not Otherwise Classified	106,437	140,912	(34,475)
			Distributed Indirect Expense Credits			
$3,251,390	$ 3,283,203	$(31,813)	TOTAL EXPENSE	$6,536,840	$ 6,623,101	$(86,261)
			OPERATING COMPARISON			
$4,697,000	$ 4,889,009	$192,009	Revenue	$ 9,027,000	$ 9,258,759	$231,759
15,423,390	15,142,175	(281,215)	Standard Available Ton Mile	31,500,193	30,509,383	(990,810)
27,972	28,576	604	Flying Hours	55,876	56,464	588
			COST ANALYSIS			
$ .692	$ .672	$ .020	Per Revenue Dollar	$ .724	$ .715	$ .009
.211	.217	(.006)	Per Standard Available Ton Mile	.207	.217	(.010)
116.24	114.89	1.35	Per Flying Hour	116.99	117.30	(.31)

Issued By Budgetary Control

operations department, the budget is classified by agencies and by expenses from which the budget is built up or less detailed budgets.

The budget is issued to immediate supervisors, each of which receives only the budget for which he is responsible. In this budget, the operations activities are divided into departments, each department being under the supervision of a responsible executive, his own budget.

operating revenue and for operating expenses by CAB functional classification is exemplified in Exhibit 7. This report enables management to immediately locate the basic reason for any variance from the forecast profit and loss whether it be revenue, expense, or level of operations.

The last report and probably the most important to the immediate supervisor is the Operating Budget Comparison (Exhibit 8) which provides the operating head with his tool for pruning out excess expenses. The Cost Analysis computation at the bottom of this report provides additional means of comparing departmental activities. The operating budget comparison is carried to as low a departmental level as is needed to provide each echelon of supervision with the tools the individual in charge requires to examine his own operations.

COMING ARTICLES

In the *N. A. C. A. Bulletin*, April 1, 1949

Techniques for Budgeting Administrative and Commercial Expenses
by Francis C. Reith

Control of Capital Expenditures—Planning and Follow Through
by P. M. Chiuminatto

Unit of Equipment Costs for Truck Leasing Operations
by Harris Saunders

An Effective Group Incentive Plan for Smaller Companies
by Arthur L. Bennett

Labor Cost Control Without Time Cards or Individual Production Time Records
by C. M. Benson and W. H. Donaldson